TRACKS 2006 ATLANTA, GA

Implementing The Tracking Network

breakout ABSTRACT

Abstract No. 33

TITLE

CONFOUNDING AND INTERACTION IN AGGREGATE-LEVEL STUDIES: A PRACTICAL GUIDE

TRACK

Network Content

OBJECTIVES

As a result of the session audience members should be better able to conduct aggregate-level analyses and interpret the results.

SUMMARY

In environmental public health tracking, data on exposures of interest are typically unavailable at the level of the individual person. Consequently, exposure-disease associations are often assessed using summary measures of exposure for geographically defined aggregates of individuals. We consider issues of bias and precision when such aggregate-level data on exposure are incorporated into epidemiologic analyses that adjust for potential confounding or that assess a possible interactive effect between the exposure and another variable. We illustrate the importance of fitting linear rather than log-linear models in such circumstances and elucidate conditions under which the frequent lack of information concerning the joint distribution of the exposure and the covariate is most problematic. We show that the differential in the precision for adjusted versus unadjusted estimates is often substantial in aggregate-level studies, and we discuss strategies for screening potential confounding variables in this setting. We also identify circumstances under which tests of null hypotheses are valid even though estimates of effects may be biased. Findings are summarized in the form of specific guidelines for the applied data analyst in terms of choice of regressions models, parameterization of independent variables, and interpretation of results.

AUTHOR(S):

W. Douglas Thompson
University of Southern Maine

Daniel Wartenberg, University of Medicine and Dentistry of New Jersey

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